Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

terior extremity of the abdomen, receives two long cæca, which may be traced forwards, one at either side of the body, till they terminate anteriorly by entering the basal joint of the first pair of legs. A large central nervous mass may be easily demonstrated. It is placed near the middle of the cephalothorax, of a somewhat stellate figure, with four pyriform lobes, from which nervous filaments pass off to the surrounding parts.

The reproductive system is very obscure ; to it, however, may probably be referred a pair of tubular organs, placed in the anterior part of the abdomen, terminating at one end in a *cul de sac*, which contains a striated, curved body, and apparently opening at the other upon the surface. The larva is hexapod. The structure of the oral organs is similar to what occurs in *Gamasus*.

Sir Robert Kane read a paper on the composition of the essential Oil of the Laurus Sassafras, and of certain compounds derived from it.

This oil, which has a specific gravity of 1087, boils at 438° Fahr. By fusion with potash it is not acidified. Its composition was found to be expressed by the formula $C_{20}\ H_{10}\ O_4$, the same as that obtained by Saint Evre for the stearopten, with which it is consequently isomeric.

When this oil is treated with chlorine, a great deal of muriatic acid gas is produced and given off, and finally a very thick liquid is produced, which requires to be kept for a long time at a temperature of boiling water to free it from the excess of muriatic acid gas ; the same may be done by washing with a small quantity of water of ammonia, and then exposure to a moderate temperature, when the chlorine compound can be obtained again, quite anhydrous. Its formula is found to be $C_{20}\ H_8\ O_4\ Cl_4$. When this body is heated to about 350° of Fahr., it suddenly and violently decomposes, gives off much muriatic acid, and deposits a large quantity of charcoal.

When the oil of sassafras is put into contact with bromine, great heat is evolved, much hydrobromic acid is evolved, and a solid product obtained, which, washed with alcohol until the excess of bromine and some secondary products are removed, is a brilliant white, crystalline powder. If this be gently heated it becomes yellowish pink. It fuses at about 300°, and soon after decomposes, giving off hydrobromic acid, and depositing charcoal. It is moderately soluble in ether, and by the cooling, or the evaporation of its ethereal solution, it can be obtained in brilliant oblique rhombs. The formula of this body is $C_{20}\,H_7\,O_4\,Br_5$.

When oil of sassafras is treated with nitric acid, very violent action is produced, and a large quantity of oxalic acid is formed; but by diluting the acid, and avoiding much elevation of temperature, a resinoid substance is obtained, of a pale yellow colour, soluble in alcohol and ether, slightly soluble in boiling water, and depositing on cooling. This body is quite destitute of acid characters, but it dissolves in alkalies, and may be precipitated by solutions of earthy or metallic salts, with the bases of which it forms definite compounds. The formula of this substance, which I term nitro-sassafras, is $C_{16}\,H_6\,O_8\,N$, and it is evidently formed by the action of

$$C_{20}\,H_{10}\,O_4 . + N_4\,O_{20}$$

giving

$$C_4\,O_6 . + H_4\,O_4 \text{ and } N_3\,O_6,$$

besides

$$C_{16}\,H_6\,O_8\,N.$$

When oil of vitriol is put in contact with oil of sassafras, an intense and beautiful crimson colour is produced. This is so remarkable as to constitute a very decisive means of recognising this essential oil. On studying this reaction more minutely, it is found that the oil of sassafras enters into a direct compound with oil of vitriol, and there is produced an intensely deep purple resinoid body, soluble in alcohol and ether, a little soluble in water, destitute of acid reaction, yet dissolving in alkalies, and being precipitated by the alkaline and earthy salts. On analysis this substance gives the formula

$$C_{20}\ H_{16}\ O_{16}\ S_{2},$$

corresponding to

$$C_{20}\ H_{10}\ O_{4} + S_{2}\ O_{6} + H_{6}\ O_{6}.$$

That the sulphuric acid exists in this body, as such, is shown by the fact that, on treating it with pure potash, the whole of the sulphur separates as sulphate of potash. This substance is denominated sulpho-sassafras by Sir Robert Kane.

During the reaction of the sulphuric acid and oil of sassafras, in order to produce this body, very small quantities should be operated on, and the mixture kept perfectly cool, so that no effervescence, or violent reaction, should take place. If there be the slightest elevation of temperature, the substance in question is decomposed, sulphurous acid is evolved, and a resinoid black material is produced, which does not contain sulphuric acid, but for which, from the complexity of the reaction accompanying its formation, and the great difficulty of obtaining it absolutely pure, Sir Robert Kane does not at present wish to propose a formula.

M. Donovan, Esq., continued the reading of his paper on the Nature of the Agency which produces the Effects called Galvanic, Electro-magnetic, Magneto-electric, and Thermo-electric.

To support the opinion of identity, and to effect other objects, one of the chief of which is to show the absolute quantity of electricity with which matter is associated, Professor Faraday makes use of the following law, viz.: "If the same absolute quantity of electricity pass through the galvanometer, whatever may be its intensity, the deflecting force upon the magnetic needle is the same." The general method of proof of the truth of this law was to charge a Leyden battery with a certain number of turns of a powerful plate electric machine, varying the number of jars employed from eight to fifteen; to transmit the charge through a galvanometer, and to note the